UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,477	11/14/2003	Takahiro Yagishita	6453P015	1939

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EXAMINER
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ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/713,477	YAGISHITA ET AL.
Office Action Summary	Examiner	Art Unit	
	Nathan Bloom	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>31 October 2007</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>20-46</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>20-46</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Applicants' response to the last Office Action, filed on October 31st, 2007 has been entered and made of record.

Claim Rejections - 35 USC § 112

1.   Claims 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is well established (see Skodras as referred to in the prior art rejection of claims 24-26 below) that during the compression of the image the number of rectangles or tiles used to encode the image is recorded in the file header, and the number of tiles or rectangles or tiles used in the decompressed image will be the same unless this values is changed by the decompression (decoding) unit. Claims 24-26 will be interpreted such that the number of tiles in the master and compressed images are the same since there is no indication that the number of tiles has been changed and thus the quality value will be based only on the number of tiles used to encode the image.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2.   Claims 20, 29, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Yamada (US 7076103 B2). _Note_: Paragraph numbers referred to in the rejection are based on

the paragraphs labeled in the US PG-PUB 2002/0025076 of the same application by Yamada.

Instant claim 20: (New) An image processing apparatus connectable via a network to a storage

to store an image compressed code of a dynamic image data, comprising:

an image expansion unit to expand the image compressed code and to output an expanded image

data; [*See the description in paragraph 0041, and figure 1 item 22 "decompression unit"*

expands (decompresses) the compressed image data and outputs a decompressed image.]

a first acquiring unit to acquire information of a master image data stored in a file header of the

image compressed code of the dynamic image data stored in the storage; [*First of all the dynamic*

image data is being interpreted as any image data that has changed or has the capability of

being changed (dynamic is defined as something that has changed or is changing), and since the

file has been compressed it has been changed and thus is dynamic image data. Now, the first

and second acquiring units are inherent to the system described by Yamada as they pull the

necessary information from the image compressed code (compression information) stored in

data as depicted in figures 2A-2C, and described in paragraphs 0043-0053. These components

or steps must exist, else this data is not obtained and used, but as is evidenced by the teachings

of Yamada in the listed sections Yamada shows the determination of quality using the known

compression information. In these sections (0043-0053) Yamada described the addition of

compression information and the accessing or use of this information in order to display an image quality level. Furthermore, as per paragraph 0042 the compression information is stored as tag information, and as stated at the end of paragraph 0005 the tag information is typically stored in a header (see Figures 2A-2C). Also, the master image data stored in the file header is the compression information (paragraph 0046) that contains information with regards to the compression mode, compression ratio, and quality level of the compressed image.]

a second acquiring unit to acquire information of the image compressed code of the dynamic image data stored in the storage; [*See above.*]

a judging unit to determine picture quality of the expanded image data output from the image expansion unit and to generate picture quality information, based on the information of the master image data acquired by the first acquiring unit and the information of the image compressed code acquired by the second acquiring unit; and [*The judging of the relative quality of the picture quality information output unit is done as the image is compressed and attached as a tag as is described in paragraphs 0044, 0047, and 0048. The judgment of quality is based on the stored compression ratio indicator that is described in paragraph 0046.*]

an image display unit to display, on a display unit, an image of the expanded image data output from the image expansion unit and the picture quality information generated by the judging unit, wherein the information of the master image data stored in the file header of the image compressed code is a number of code bits of an entire file of the master image data, and the information of the image compressed code of the dynamic image data is a number of code bits of the dynamic image data. [*See paragraphs 0045-0047 which describes the display of the*

decompressed image in combination with the compression information (relative image quality). In particular paragraph 0046 describes the relative quality levels displayed being based on the compression ratio of the image. It was common knowledge at the time of the invention that the compression ratio is in fact calculated from the number of code bits of the compressed image as compared to the master image. Since the displayed quality level as disclosed by Yamada is based on the compression ratio then it is also based on the number of bits of the master image and the compressed image. Therefore, Yamada teaches the display of quality information (quality level indicator) based on the number of bits contained in the master and compressed image. Furthermore, it was well understood to one of the art that the compression ratio is a good indicator of the relative level of quality in comparison to the master image. However, as can be seen from Yamada in paragraph 0046 the actual judgment of the quality information is determined upon the generation of the image when the compression information is created, and not during a later determination step after compression has been performed. Examiner takes official notice that one of ordinary skill in the art would fully recognize that this step could be completed upon compression of the image using the compression information generated during compression or after compression using the same compression information that has been stored in the header of the compressed data file without changing the end result, which is an indication of the quality of the image. Thus one could either provide the compression ratio and quality level indicator at generation of the compressed image and store it in the header, or store the raw data in the header and determine the compression ratio and quality level indicator at a later time.]

Instant claims 29 & 38: Claims 29 and 38 describe the computer readable medium storing the

executable method and the method as performed by the apparatus of claim 20. As per the

rejection of instant claim 20 the apparatus has been taught by Yamada and thus the method

accomplished by the apparatus has also been disclosed. Furthermore, paragraph 0030 discloses

that this method can also be implemented using software.

3.   Claims 21-28, 30-37, and 39-46 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Yamada as applied to claims 20, 29, and 38 above, and further in view of

Skodras et al ('The JPEG2000 Still Image Coding System: An Overview").

Instant claim 21: (New) An image processing apparatus connectable via a network to a storage

to store an image compressed code of a dynamic image data, comprising:

an image expansion unit to expand the image compressed code and to output an expanded image

data; [*See rejection of claim 1.*]

a first acquiring unit to acquire information of a master image data stored in a file header of the

image compressed code of the dynamic image data stored in the storage; [*See rejection of claim*

1.]

a second acquiring unit to acquire information of the image compressed code of the dynamic

image data stored in the storage; [*See rejection of claim 1.*]

a judging unit to determine picture quality of the expanded image data output from the image

expansion unit and to generate picture quality information, based on the information of the

master image data acquired by the first acquiring unit and the information of the image

compressed code acquired by the second acquiring unit; and [*See rejection of claim 1.*]

an image display unit to display, on a display unit, an image of the expanded image data output

from the image expansion unit and the picture quality information generated by the judging unit,

wherein the information of the master image data stored in the file header of the image

compressed code is a number of bit planes of an entire file of the master image data, and the

information of the image compressed code of the dynamic image data is a number of bit planes

of the dynamic image data. [*As per rejection of claim 1 Yamada teaches the expansion,*

acquisition, judging, and display using the compressed image data and the compression

information, but Yamada does not teach the use of the number of bit planes as the quality

information used to judge the relative quality of the compressed image. Furthermore, Yamada

does not teach the method of encoding (particular compression algorithm) the compressed

image. The method of encoding a JPEG (mentioned in Yamada paragraph 0005) image is

known as JPEG2000 and was known to one of ordinary skill in the art as is evidenced by the

teachings of Skodras and would have been obvious to combine the teachings of Yamada with

Skodras to use a modern and efficient method of image compression. However, neither Skodras

nor Yamada teach the use of bit planes to compare image quality, but in ISI/IEC 15444-1 in

Annex A the number of bit planes of the original image is shown to be stored in the header file as

well as the number of bit planes of the compressed image. Examiner takes official notice that it

was notoriously well known to one of ordinary skill in the art that the number of bit planes used

in an image is a measure of image quality. Since JPEG2000 compressed images carry this

quality information it would have been obvious to one of ordinary skill in the art to substitute

this known quality indicator using a method such as taught by Yamada (as per argument of claim

20) to indicate the quality of the compressed image relative to the original using these quality

indicators (number of bit planes). Furthermore, it should be noted that the bit depth (number of

bit planes) of the JPEG2000 compressed image is not necessarily the same across all pixels and

thus a nominal bit depth would have to be calculated to be used as an overall image quality

indicator.]

Instant claim 22: (New) The image processing apparatus of claim 21, wherein the image

compressed code is obtained by encoding frequency conversion coefficients of the master image

data in units of bit planes. [*Skodras (see the last bulleted item in the left column of page 1106)*

discloses the use of JPEG2000 as a compression algorithm, and this compression algorithm

encodes the image data by encoding frequency conversion coefficients of the master image data

in units of bit planes.]

Instant claim 23: The claim language of claim 23 is identical to that of claims 20-21 except that

the quality indication information obtained from the master and compressed image are the

resolutions of each image. [*As per rejection of claims 20-21 the use of known quality indicators*

to determine and display a level of quality of a compressed image are known to one of ordinary

skill in the art. Also, Skodras discloses in an overview of the JPEG2000 compression standard

on page 1119 in section IV.6 titled "New File Format With IPR Capabilities" that the resolution

information of both the master and compressed image are in the header file (tag) of the image

compressed data. Furthermore, resolution is a well known indicator of image quality and as per

the rejection of instant claim 21 it would have been obvious to use a known quality indicator to

determine a level of image quality based on the teachings of Skodras and Yamada.]

Instant claim 24: The claim language of claim 24 is identical to that of claims 20-21 except that

the quality indication information obtained from the master and compressed image are the

number of rectangular regions of each. [*As per rejection of claims 20-21 the use of known*

quality indicators to determine and display a level of quality of a compressed image are known

to one of ordinary skill in the art. Also, Skodras discloses in an overview of the JPEG2000

compression standard on page 1119 in section IV.6 titled "New File Format With IPR

Capabilities" that the number of tiles used to encode the image are in the header file (tag) of the

image compressed data. Furthermore, as per the JPEG2000 standard and the disclosure of

Skodras the number of tiles in the decoded image are the same as that of the master image. Thus

the quality must be based on just the number of tiles since the number of tiles does not change.

Furthermore, as per Skodras page 3, 3rd paragraph of the right hand column (and the

surrounding disclosure), and the section entitled "Tiling" on page 5 the number of tiles (which is

based on the size of the tiles) used to encode and decode the image is a well known indicator of

image quality and as per the rejection of instant claim 21 it would have been obvious to use a

known quality indicator to determine a level of image quality based on the teachings of Skodras

and Yamada.]

Instant claim 25: (New) The image processing apparatus of claim 24, wherein the image

compressed code is obtained by dividing the master image data into a plurality of rectangular

regions and encoding the master image data in units of rectangular regions. [*This is standard to*

the JPEG2000 compression algorithm and is referred to as tiling. See Skodras page 3, 3rd

paragraph of the right hand column and the section entitled "Tiling" on page 5.]

Instant claim 26: (New) The image processing apparatus of claim 25, wherein predetermined

rectangular regions have been subjected to a weighting of the number of rectangular regions of

the image compressed data [*As per Skodras in section IV, IV.1 regions of increased importance*

are referred to as ROI (regions of interest) in JPEG2000 and are given a higher quality then the

rest of the compressed image because it is determined to be more important than other regions of

the image. Thus two images with the same number of tiles could have two different relative

qualities (compared to original image) because one would have increased quality in the ROI.

The information of the size and particular ROI are stored in the header information for decoding

(see JPEG2000 compression standard). Based on the fact that the quality of the images varies

based on the existence of tiles with increased quality in a particular region and that this quality

indicator is provided in the header data it would have been obvious to one of ordinary skill in the

art to give these tiles greater weight in the computation of the quality of the image than tiles of

lesser quality to provide a more accurate calculation of the overall image quality based on the

number of tiles.]

Instant claim 27: The claim language of claim 27 is identical to that of claims 20-21 except that the quality indication information obtained from the master and compressed image are the number of frames of each. [*As per rejection of claims 20-21 the use of known quality indicators to determine and display a level of quality of a compressed image are known to one of ordinary skill in the art, but disclosed subject matter of Yamada and Skodras was about single images. In compression of a video (frame by frame) using the JPEG2000 motion compression uses JPEG2000 compression on a frame by frame basis treating each frame as a single image (JPEG2000 Motion is mentioned in the referenced standard). Since each frame is treated and not dropped then the number of frames in the compressed image data is the same as the number of frames in the master image data. However, if frames were dropped by the decoding unit based on some decoding or bandwidth requirement then the compressed video would have less frames then the original. Examiner takes official notice that it was notoriously well known to one of ordinary skill in the art that less frames in a video corresponds to a lower frame rate and hence a lower quality of the video. Given the argument of claims 20-21 it would have been obvious to one of ordinary skill in the art to acquire the number of frames provided in the header of the compressed file and to compare that number to that of the original (also provided in the header information as per ISO/IEC 15444-3) Furthermore, the number of frames (frame rate) is a well known indicator of image quality and as per the rejection of instant claim 21 it would have been obvious to use a known quality indicator to determine a level of video quality based on the teachings of Skodras and Yamada in view of the Motion JPEG2000 standard.*]

Instant claim 28: (New) The image processing apparatus of claim 27, wherein the image compressed code is obtained by encoding the master image data, formed by dynamic image data, in frame units. [*See the rejection of claim 27 wherein the coding of the stills of a video image is referred to as the Motion JPEG2000 standard (see ISO/IES 15444-3).*]

Instant claims 30-37 & 39-46: Claims 30-37 and 39-46 describe the computer readable medium storing the executable method and the method as performed by the apparatus of claims 21-28. As per the rejection of instant claims 21-28 the apparatus has been taught by Yamada and thus the method accomplished by the apparatus has also been disclosed. Furthermore, paragraph 0030 discloses that this method can also be implemented using software.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Bloom whose telephone number is 571-272-9321. The examiner can normally be reached on Monday through Friday from 8:30 am to 5:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed, can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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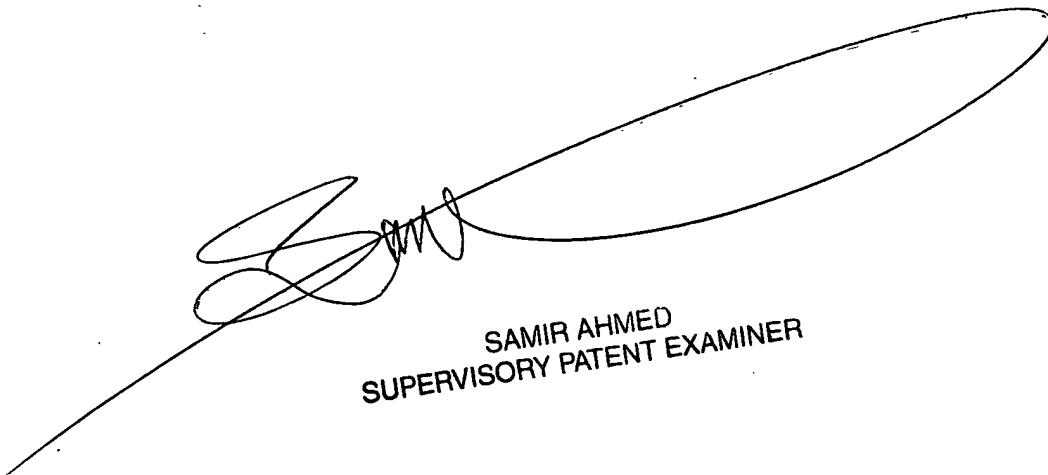
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